UNIVERSITI PUTRA MALAYSIA

AN EVALUATION OF THE OUTPUT OF RUBBER FOREST PLANTATION

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BY

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SPECIALLY DEDICATED TO:

MY BELOVED PARENTS,

SIONG PING AND SIONG KAI,

AND ALL MY BEST FRIENDS

ABSTRACT

The wood based industry is important to Malaysia. The timber sector continues to be major contributor to the economic sector, generating about 4.5% of the country's GDP and has a workforce of 240 000 people. Export of timber products amounted to about US$4.5 billion in 1999 or 5.4% of the country's foreign receipts. Downstream manufacturing especially furniture fabrication saw the shift from over-dependence on solid wood from the natural forest species to Rubberwood and panel products such as MDF and particleboard. Presently, about 85% of all wooden furniture exported is made of Rubberwood. Rubberwood is the main raw material used for the booming wood-based industry in Malaysia. However, the supply issue of the Rubberwood resource is intensely debated in Malaysia. Wood-based industry claim that there is a shortage of supply, but the related government agencies argue that the short supply is simply due to logistic problem. The implications of Rubberwood sawntimber shortage are far reaching because it affects higher production costs low productivity and inconsistency quality in furniture production. The objective of this study is to evaluate availability of Rubberwood supply for the wood-based industry next few year and also viability of rubber forest plantation. This study found that, the amount of Rubberwood is not enough to support the Furniture Industry in Malaysia. Beside that, from the study examine the viability of investment in establishing short-cycle (15 years) rubber forest plantations fro extraction of both latex and wood as well as that of plantations established solely for extraction of timber, both IIR and NPV value for rubber forest plantations with wood and latex extraction are higher than the plantations with wood extraction. However, B/C Ration for forest plantations with wood extraction is higher than the forest plantations with wood and latex extraction. This means that, we can get more revenue from the plantations with wood and latex extraction. Therefore, the return from the wood only option is poorer than the latex and wood option.

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CHAPTER 1

1.0 INTRODUCTION

Optimism and renewed confidence has returned to Malaysia's timber industry after having suffered the impacts of the financial crisis that hit a number of Asian countries since July 1997. The improving economies of the countries have underpinned the general upturn in the sales and prices of tropical timber products in the world market. Malaysia's timber industry had benefited from this rebound, with increase in shipments and export receipts.

The development of the wood based industry in Malaysia started with 8 sawmills in year 1926. The sector progressed continuously with the establishment of more value added industries such as plywood, panel product, mouldings and joinery furniture. The improved performance of the wood-based industry is important to Malaysia. The timber sector continues to be a major contributor to the economic sector, generating about 4.5% of the country's GDP and has a workforce of 240 000 people in 1999. Besides that, Export of timber products amounted to about US$4.5 billion in 1999 or 5.4% of the country's foreign receipts.

A striking feature of Malaysia's timber industry is its ability to evolve and transform itself in line with changing market needs and trends. Some twenty years ago, logs and primary products were the main export items. The industry has since expanded

Malaysia's MDF industry is of more recent origin but its presence is increasingly felt. The industry expanded rapidly in the early 90's and by 1999, it was able to contribute US$194.5 million in export receipts. Currently there are nine MDF plants in the country operating 13 production lines. Of the nine, six use Rubberwood and one uses oil palm empty fruit bunches as raw material in Peninsular Malaysia while two plants in Sarawak utilise mixed tropical hardwoods. The total annual production capacity of the MDF plants is about 1.3 million m^3.

In addition, there are 10 particleboard plants and 5 wood cement board plants. The particleboard mills have a combined capacity of about 700,000 m^3 per year. Rubberwood is the main raw material being used by particleboard plants while other mills utilise wood residues generated from other production activities. The moulded particleboard mills use a special process to produce furniture components such as tabletops, chair seats, chairbacks, school desktops and others. The MDF and particleboard plants are relatively high capital investment industries and they are making significant impact on the downstream wood-based industries in terms of raw material supply.

The Malaysian furniture industry has been extremely vibrant since the 1990s, surpassing the expectations of the government and industry. In 1980, exports of wooden and rattan furniture was recorded at merely US$14.9 million and this has grown to US$1.04 billion in 1999, with a share of 2.5% of the global market. Rubberwood is the choice raw material and its availability as well as governmental encouragement has

largely contributed to the success of the furniture industry. Presently about 85% of all wooden furniture exported is made of Rubberwood although furniture manufacturers are increasingly incorporating other local and imported species in their furniture production to meet consumer preferences. In fact, Rubberwood furniture has already gained a niche and acceptance internationally as being quality, durable and aesthetically attractive. There are at present over 3,000 furniture, joinery and other woodworking mills in Malaysia with most of the mills located in the West Coast of Peninsular Malaysia. Of the furniture companies, about 20% fall under the category of large manufacturers catering to the export markets. The industry is largely dominated by the Small and Medium Industries which supply mainly to the larger serial production plants equipped with sophisticated machinery producing for the export markets.

1.2 Problem Statement

Rubberwood is the main raw material used for the booming wood-based industry in Malaysia. However, the supply issue of the Rubberwood resource is intensely debated in Malaysia. Wood-based industry claim that there is a shortage of supply, but the related government agencies argue that the short supply is simply due to logistic problem.

The implications of Rubberwood sawntimber shortage are far reaching because it affects higher production costs, low productivity and inconsistency quality in furniture production. Low supply of Rubberwood in local market may force manufacturers to pay

more to ensure continuity of the manufacturing process. Manufacturers need a stable long-term supply at low price to ensure the final products are more competitive in the open market.

Local furniture manufacturers have encountered stiff competition from the overseas buyers for the raw material. Based on the shortage of Rubberwood, furniture manufacturers have urged the government for the imposition of restriction on Rubber-wood export, even banning it if necessary. However, Rubber-wood producers demand more export quota since the export market of Rubberwood is more profitable. Malaysia has followed the decision taken by Indonesia to impose an export levy on the timber, albeit not as substantial, in order to ensure that local manufacturers of downstream and high value-added products have sufficient raw material at acceptance price for processing.

1.3 Objective

The main objective of this study is to evaluate the output of Rubber Forest Plantations and assess the viability of such projects.

CHAPTER 2

2.0 SUPPLY, DEMAND AND PRICING FOR RUBBERWOOD

2.1 COST STRUCTURE IN FURNITURE PRODUCTION

Profit maximisation is the main objective of every furniture manufacturer. Profit is very dependent on production costs, which must be kept within limits to ensure competitiveness and marketability both in domestic and international markets. Raw materials cost, labour cost and overhead cost are the three main elements in furniture production cost.

Furniture manufacturing is highly dependent on raw materials. From the survey done by MTC in 1998 it was shown that raw materials constitute almost 53% of total production cost (MTC, 1998). Raw materials used in furniture industry can be categorised into two distinct groups, direct materials and consumables. Direct materials encompass the raw materials which can be traced back to the products with relative ease. Solid wood, fittings and coating materials are some of the common direct raw materials. Consumables group (also known as indirect raw material) is represents the materials, which cannot be related accurately to any single item such as glues, abrasives, tools, and cutters. The cost of direct raw materials used in the manufacture of furniture products can be calculated by the sum total of the finished quantity and the allowances incorporated for processing wastage. Table 1 show the input cost of rubber wood-based furniture in

Malaysia from 1993-1997 and Table 2 show the contribution of raw materials and labour costs. From these two tables, it is noted that raw material constitutes almost half of the total production cost.

Table1: Inputs costs of the Rubbberwood-based furniture industry in Malaysia.

Factors	1993	1994	1995	1996	1997
Value of production (US$ million)	263	266	347	437	500
Cost of raw materials (US$ million)	98	112	146	204	264
Finishes (US$ million)	6	8	10	11	12
Adhesive (US$ million)	1.3	2.1	3.2	3.7	3.9
Packaging (US$ million)	2.4	2.9	3.9	4.5	5.3
Panel products (US$ million)	5.3	6.8	8.4	9.7	10.5
Other materials (US$ million)	2.6	2.9	3.9	4.5	5.3
Direct workforce	22,000	31,000	38,000	42,000	47,000
No. of outfits	2,100	2,450	2,600	2,900	3,400

Source: MTIB, CSO, FMM, MITI and MRB.

Table 2: Contribution of raw materials and labour costs.

Cost Elements	1993	1994	1995	1996	1997
Raw materials cost as % of value of production	37%	42%	43%	47%	53%
Labour cost as % of value of production	6.7%	9.4%	9.5%	9.6%	10.4%

Source: MTIB, CSO, FMM, MITI and MRB.

The furniture manufacturing industry is labour-intensive in nature. Labour costs constitute around 10% of total production cost. This share of labour costs is quite

consistent across different types of furniture manufactures. Lobour costs has a close relationship with productivity and when productivity suffer, the net wage rate increases because less work is done during the available process time.

From the survey done by MTC, there is some evidence to suggest that, overhead costs in the furniture manufacturing industry account for up to 30% of the total production cost. The term overhead is a broad category of cost elements covering all indirect costs or fixed costs, as aptly described in the accounting sense. It involves costs due to administration, marketing, quality control, supervision, capacity-utilisation, taxes, interest, insurance, and other cost factors which must be treated as a period costs. Overhead in furniture manufacturing can be classified into three groups: manufacturing overhead, administrative overhead and selling overhead.

Manufacturing overhead consist of cost elements that cannot be charged directly to the product such as indirect materials, indirect labour, machine and equipment depreciation, factory insurance, maintenance and power utilisation. Administrative overhead costs, also known as the general overhead costs, cover executives and secretarial salaries, management consultants and indirect labour costs. Selling overhead costs cover all the expense of marketing, advertising and selling activities.

2.2 EXPORT OF RUBBERWOOD PRODUCT

Major markets for Malaysia's Rubberwood furniture are the US, Japan, Singapore and the United Kingdom. In 1999, 40% of Rubberwood furniture exports went to the US. Rubberwood furniture exported to these markets are either fully assembled, semi-knock-down or RTAs (ready-to-assemble). MTIB's promotional activities changed its emphasis from supply of quality sawn Rubberwood from Malaysia to finished products, particularly sawnwood furniture. Promotional efforts have been conducted by MTIB through exhibitions such as in Germany, USA, Japan, United Arab Emirates and Australia. Nonetheless, in Malaysia, export promotion efforts are undertaken by the Malaysia Timber Industry Board (MTIB), Malaysia External Trade Development Corporation (MATRADE), Malaysia Furniture Industry Council (MFIC). The Malaysia International Furniture Fair (MIFF) has been regarded as a successful avenue for Malaysia manufactures to venture into export market. According to MFIC's own estimate, through MIFF furniture exporters were able to secure export sales amounting RM 1.58 billion (US$ 42 million) in 1999. The amount recorded showed a 12.9% growth over 1998's figure. The value export of Rubberwood furniture from 1991 to 1999 are shown in Table 3.

Table 3: Export of Rubberwood Furniture from 1991 to 1999

YEAR	VALUE (IN MILLION RM)
1991	282
1992	405
1993	749
1994	1,130
1995	1,339
1996	1,671
1997	2,024
1998	2,596
1999	3,120

Source: MTIB

Apart from furniture and furniture parts, Rubberwood is also exported in many forms such as sawntimber, moulding, MDF, chipboard and builders' carpentry & joinery. The export market is far more important than the domestic market. It is estimated that export was 3.7 times of domestic demand at ex-factory price for wooden furniture in 1999. The export performance of these products is shown in Table 4.

Table 4: Export of Malaysian Rubberwood Sawntimber and Rubberwood products 1993 – 1999 (RM Million)

Product	Export Value Contribution of Rubberwood						
	1993	1994	1995	1996	1997	1998	1999
Sawntimber	18.6	35.9	25.2	38.1	15.1	35.2	-
Furniture	749	1130	1339	1670	2024.8	2596.8	3210
Moulding	103.2	37.6	123.1	120	136.1	135.4	168.3
MDF	99.0	182.0	218.0	273.0	421.2	591.2	634.4
Chipboard	20.3	18.0	30.7	30.1	61.4	119.0	119.8
Builders' Carpentry& Joinery	n.a	n.a	118.8	141.1	176.3	231.7	250.4
Total	990.1	1503.5	1854.6	2272.3	2834.9	3709.3	4042.5

Source: MTIB

2.3 PRICE OF RUBBERWOOD

There is an upward trend in Rubberwood log prices which fetched RM83 per m3 in 1999, registering an increase of 177% over 1988. As of March 2000, the price of Rubberwood log gradually increased to RM 86 per m3, up 3.6%. Furthermore, the domestic price of Rubberwood sawntimber also recorded an uptrend. In 1999, the price increased by 23% and 39% for 1" x 1' and 4" x 4" sizes respectively, compared to 1989. However up to Mac 2000 the price of Rubberwood sawntimber has slighty decreased to RM 508-RM 882 per m3, down 5.9% to 3.5% respectively due to government policy of restricting the export of Rubberwood sawntimber. Average proces of Rubberwood log and sawntimber for the period 1989 – 2000 are reflected in Table 5 below:

Table 5: Average Domestic Prices of Rubberwood Log and Sawntimber

Year	Rubberwood (RM per m^3)	
	Log	Sawntimber*
1989	31	439-658
1990	35	393-626
1991	39	498-743
1992	42	530-798
1993	42	546-805
1994	46	580-800
1995	50	581-799
1996	59	597-843
1997	65	525-809
1998	72	498-790
1999	83	540-914
2000 (Mac)	86	508-882

* Price range is based on the timber sizes : 1" x 1" to 4" x 4"

Source: MTIB

2.4 Price of Rubberwood and other Light Hardwoods

2.4.1 Rubberwood Log and other light hardwood log species

Price of Rubberwood and other Light Hardwood such as Red Meranti, Nyatoh, Sepetir and Mixed Light Hardwood logs registered an upward trend since the last ten years. Price of Rubberwood logs rose by 168% to RM83 per m3 as compared to RM31 per m3 recorded in 1989. Similarly, price of other light hardwood species such as Red Meranti, Nyatoh, Sepetir and mixed light hardwood which is commonly utilized material for furniture manufacturing during the 80's increased by 163% to RM665 per m3, 188% to RM645 per m3, 161% to Rm433 per m3 and 198% to Rm370 per m3 respectively in 1999 (Refer table 6).

Table 6: Average Prices Of Rubberwood & Other Light Hardwood Log Species (RM/m^3) 1989 –1999

Year	Rubberwood	Red Meranti	Nyatoh	Sepetir	Mixed Light Hardwood
1989	31	253	224	166	124
1990	35	267	241	158	138
1991	39	262	285	196	182
1992	42	301	344	273	198
1993	41	483	486	371	222
1994	46	370	481	374	216
1995	50	402	496	379	214
1996	59	499	611	369	268
1997	66	544	666	523	323
1998	72	498	613	476	314
1999	83	665	645	433	370

Source: MTIB

2.4.2 Rubberwood Sawntimber and other light hardwood sawntimber species

Overall, prices of wood species such as Rubberwood sawntimber and other Light Hardwood sawntimber species indicate an uptrend. In 1999, price of Rubberwood registered an increase of 15.8% to RM540 per m^3 for the size of 1" x 1" and 34% to RM914 per m3 for 4" x 4" compared to RM 439 per m^3 and RM 658 per m^3 respectively in 1989. Prices of red Meranti, Nyatoh and Sepetir improved by 195%, 280% and 153%

respectively compared to prices of 1989. Average prices of Rubberwood and other light hardwood sawntimber are reflected in Table 7.

Table 7: Average Prices of Rubberwood and other light-hardwood sawntimber species (RM/m^3) (ex-mill) 1988 –1999

Year	Rubberwood	Red Meranti	Nyatoh	Sepetir	Mixed Light Hardwood
1988	410 – 625	281	311	281	195
1989	439 – 658	434	508	374	277
1990	393 – 626	419	609	386	277
1991	498 – 743	437	646	410	294
1992	530 – 798	514	704	520	308
1993	546 – 805	756	898	654	385
1994	580 – 800	910	1002	663	386
1995	581 – 799	757	984	630	390
1996	597 – 843	775	1102	660	476
1997	525 – 809	837	1178	726	533
1998	498 – 790	831	1182	712	530
1999	540 – 914	1146	1297	704	585

* Price range for Rubberwood sawntimber is based on the sizes: 1" x 1" to 4" x 4"

Source: MTIB

2.5 Supply of Rubberwood

An impending shortage of Rubberwood has already been experienced and is expected to continue taking into account that more processing industries may come on stream. Following the government's policy of reducing the replanting grant, the rubber area for replanting by smallholdings has shown a downtrend, from 36,851 hectares in 1995 to only 24,396 hectares in 1999. Due to this situation, the supply availability of Rubberwood will decline significantly especially in Peninsular Malaysia where, other crops particularly oil palm, are gradually replacing rubber due to lower labour costs and higher returns.

2.5.1 Rubber Planting in Peninsular Malaysia.

Table 8 indicates the total area of 1,151,012 hectares planted with rubber by smallholdings and estates in 1998 in Peninsular Malaysia. Under the smallholdings sector, RISDA accounts for the largest area (63.7%) with 733,641 hectares, followed by FELCRA with 161,965 hectares (141%) and FELDA with 77,679 hectares (6.8%). These agencies are responsible for the replanting schemes which provide grants to smallholders. The estate sector accounts for only 177,727 hectares (15.4%).